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(56) Documents cited

GB 2196978 A	GB 2058820 A	GB 2047256 A
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GB 1250261 A	EP 0170000 A2	DE 002051902 A
JP 570040543 A	US 4183767 A	US 3644241 A
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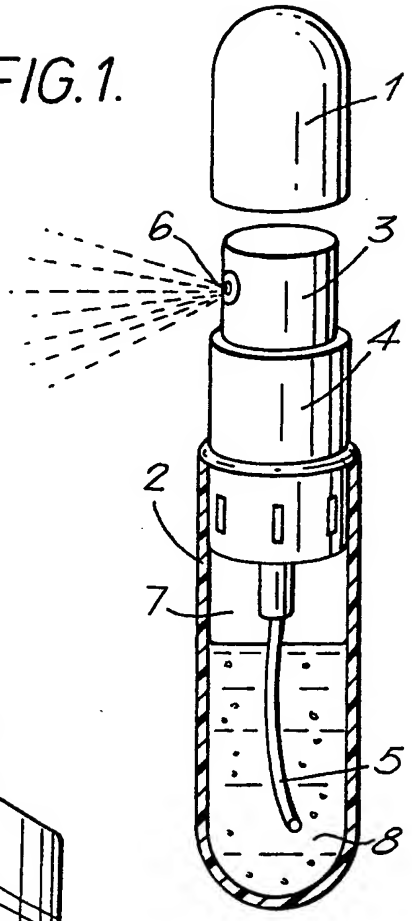
(54) **A sprayable composition for application to a fabric**

(57) A sprayable composition, for application to a fabric material for containing a hole or tear therein, has a sufficiently low viscosity for spray application and is hardenable, after spray application to a site of a hole or tear in a fabric material, to bind threads of the fabric together sufficiently to prevent significant further enlargening of the hole or tear. The composition is particularly useful for preventing the further 'running' of ladders or holes in articles of hosiery e.g. stockings or tights. The composition preferably contains a binding agent, e.g. nitrocellulose, cellulose propionate, cellulose acetate butyrate, ethyl cellulose, sucrose acetate isobutyrate, polyvinyl acetate, polyvinyl alcohol, an acrylic resin and/or polymethyl methacrylate, and an organic solvent. The composition can be sprayed as a mist of fine droplets from a pump action dispenser, or an aerosol dispenser, which preferably uses a non-CFC propellant, e.g. butane.

GB 2 251 437 A

FIG. 1.



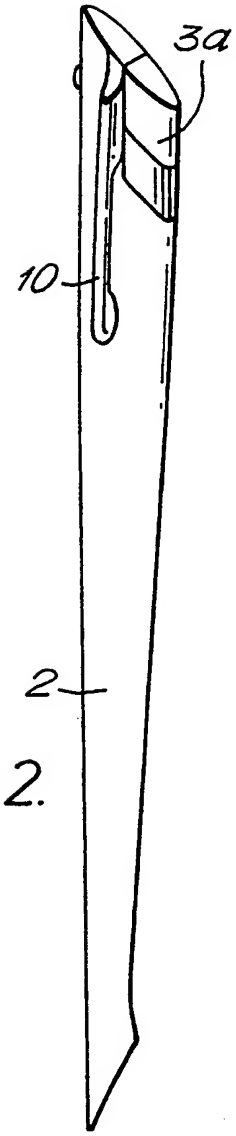


FIG. 2.

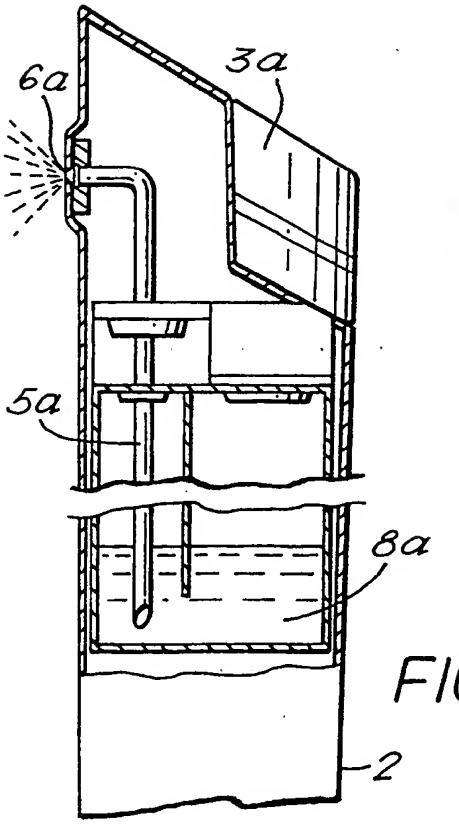


FIG. 3.

COMPOSIITION, METHOD AND MEANS FOR CONTAINING A HOLE OR TEAR IN A FABRIC MATERIAL

DESCRIPTION

This invention relates to a compbsition, method and means for containing or restricting the further opening of a hole or tear in a fabric material. In particular, the invention relates to a composition, method and means for preventing the further running of ladders or holes in articles of hosiery, such as ladies nylon or silk stockings or tights.

When a pair of stockings or tights or torn, or "laddered", it can often be at an embarassing or inconvenient moment, when a replacement garment is not available, or changing is not practical. Therefore, wearers need to be able to contain such ladders or tears to prevent them from becoming enlarged or "running", so as to thereby avoid further personal discomfort and embarassment. For instance, if a ladder forms above the hemline of a wearer's skirt and it can be contained and prevented from running downwardly

below the hemline, the wearer can carry on wearing the damaged pair of stockings or tights until such time as they can be changed.

A known method for dealing with ladders and tears in tights or stockings by way of emergency, is to apply a blob of nail varnish to the damaged area. Nail varnish is normally a highly viscous, but relatively quick setting varnish or lacquer which forms a barrier around a tear and, thus prevents it from running further. The problem with this method is that a supply of nail varnish is not always readily to hand and, because they are often highly coloured, any repair carried out using such a varnish is highly visible and thus unsightly. Furthermore, the composition of the nail varnish can be such that it causes the tights or stockings to stick to the wearer's leg which can be uncomfortable. Nail varnish can also cause irritation to the skin.

It is an object of the invention therefore to provide a composition, method and apparatus, for preventing further running or laddering of stockings or tights,

which overcome or substantially reduce some or all of these problems.

According to a first aspect of the invention, there is provided a sprayable composition, for application to a fabric material for containing a hole or tear therein, wherein said composition has a sufficiently low viscosity for spray application and is hardenable, after spray application to a site of a hole or tear in a fabric material, to bind threads of the fabric together sufficiently to provide a barrier to significant further enlargening of the hole or tear. Advantageously, a sprayable composition, in accordance with the present invention, may be carried in a conveniently sized spray applicator, or aerosol container, and sprayed at or around a damaged portion of a fabric article, such as a stocking, whenever required and without difficulty. The barrier provided by the use of the invention should be sufficient to prevent significant further enlargening of a treated hole or tear, under normal usage of the fabric.

Preferably, the composition is substantially colourless and in an embodiment, the sprayable composition can harden to bind the threads of a torn or holed fabric material which is under tension. Preferably, the sprayable composition is for containing a hole or tear in fabric material formed from polyamide filaments. In a preferred embodiment, the fabric material is an article of clothing and the composition is hardenable, after spray application to a site of a hole or tear in the material, to bind threads of the fabric together sufficiently to provide a barrier to significant further enlargening of the hole or tear when the fabirc is under tension created by a wearer's body. Most preferably the article of clothing is an article of hosiery, such as a stocking or a pair of tights.

In a further embodiment, a sprayable composition in accordance with the present invention, comprises a binding agent and a solvent carrier, wherein, after spray application to a site of a hole or tear in a fabric material, the solvent carrier evaporates leaving the binding agent to form a body, which binds together fibres of the fabric to thereby provide

a barrier to significant further enlargening of the tear or hole.

Preferred binding agents include film forming agents such as nitrocellulose (cellulose nitrate), cellulose propionate, cellulose acetate butyrate, ethyl cellulose, sucrose acetate isobutyrate, vinyl polymers, such as polyvinyl acetate and polyvinyl alcohol, acrylic resins, such as acrylic polymers, including polymethyl methacrylate.

Preferred solvents include acetone, ethyl acetate, ethanol, butyl acetate, methyl ethyl ketone, toluene and mixers thereof..

The binding agents are employed in their normal commercially available forms, that is in the form of solid powders or granules, or in the form of liquids or solutions in one of the aforementioned solvents, or in another solvent, such as isopropyl alcohol.

In a second aspect, the present invention provides a method for containing a hole or tear in a fabric material, comprising spraying a mist of fine droplets of a composition in accordance with the first aspect of the invention, at the site of said hole or tear, and allowing the composition to harden and to thereby bind threads of the fabric together sufficiently to provide a barrier to the hole or tear from becoming significantly enlargened.

In a third aspect, the present invention provides apparatus for use in a method according to the second apsect of the invention, which apparatus comprises a container filled with a composition in accordance with the first aspect of the invention, together with means for dispensing said composition as a mist of fine particles. Preferably, the apparatus takes the form of a mechanically operable atomiser, or an aerosol container. In the latter case the preferred propellants include lower hydrocarbon gases, such as butane, rather than a CFC, of the type considered responsible for depleting ozone levels in the upper atmosphere.

The low viscosity quick drying solution is preferably dispensed from an atomiser which is small and compact and will readily fit into a ladies handbag. It is important that the dispenser is convenient to use and as small as possible. The container can contain a sealed reservoir and be disposable when empty or alternatively it can include a reservoir which is refillable.

The following examples of sprayable compositions in accordance with the present invention are provided by way of example only.

Example 1 - Preparation of Sprayable Composition A

50 grams of commercially available nitrocellulose having a viscosity of between 18 and 25 cps is admixed with 650 grams of ethyl acetate and 300 grams of butyl acetate. The mixture is stirred at room temperature until homogeneous, to provide a final composition ready for loading into an atomiser or aerosol container.

Table 1 shows the proportions, in parts by weight, of the components included in composition A, as described above, and in further compositions B-M in accordance with the invention. Compositions B-M are prepared in the same manner as composition A, i.e. by employing the method of Example 1. However, where the binding agent employed is a solid, such as a polymethyl methacrylate (in compositions L and M) the binding agent, in a particulate or granular form, is introduced into the solvent mixture (which in examples L and M comprises acetone and, respectively, acetone in admixture with ethanol) and stirred until the binding agent becomes completely dissolved.

Table 1

TABLE 1

SPRAYABLE COMPOSITIONS

	A	B	C	D	E	F	G	H	I	J	K	L	M
Binding Agents													
Nitrocellulose	5	7	10										
cellulose acetate butyrate				5	8			20	10				
cellulose acetate						10	5						
ethyl cellulose										5	8		
polymethyl methacrylate												10	3
Solvent Carriers													
Acetone						60	65	45	40			90	90
ehtanol										15	15		7
ehtylacetate	65	47	50	65	62	30	30	40	45	80	77		
butyl acetate	30	46	40	30	30								
Total:	100	100	100	100	100	100	100	100	100	100	100	100	100

The accompanying drawings show examples of dispensers in accordance with the third aspect of the invention, which are suitable for filling with and thereafter dispensing compositions in accordance with the first aspect of the invention. In particular, these dispensers are suitable for containing and dispensing any of compositions A-M as described above.

Figure 1 shows one form of dispenser for use in the practice of the present invention;
Figure 2 shows an alternative dispenser; and
Figure 3 is a partial view of the interior of the dispenser shown in Figure 2.

Referring to the drawings, there is shown a dispenser comprising a removable cap 1 on a dispenser body 2 having a depressible plunger 3, which is mounted for recriprocal movement in a housing 4. A tube 5 extends from the housing 4 and is connected by passageways (not shown) to a nozzle outlet 6 in the plunger 3 . The container is constructed so that on depression of the plunger 3, a pressure is generated in space 7, above a sprayable composition 8, which forces the composition

up the tube 5 to exit as a spray of fine droplets from the nozzle outlet 6. The construction of the dispenser is of a known type and, therefore, it will not be described further here. As an alternative to the described pump action dispenser, an aerosol dispenser may be used which, preferably, does not use a CFC as propellant. Suitable propellants, therefore, include lower hydrocarbons such as commercial grade butane.

Figures 2 and 3 show an alternative form of dispenser which is in the general shape of a human leg and has a clip 10 so that it can be retained in a user's pocket. As can be seen from Figure 2, the dispenser comprises a depressible plunger 3a which is movable axially relative to the dispenser body 2 to dispense the sprayable composition 8a from the reservoir via outlet tube 5a and dispensing nozzle 6a.

The composition 8, to be dispensed from a particular dispenser, should be selected so as to be capable of spraying easily into a fine spray and to be quick drying and not too thick so that it clogs the nozzle. The nozzle 6 must be small enough for a fine wide spray

but not so big that too much liquid is released. Suitable nozzles can be selected from those commercially available, in the light of the pressurising or propellant system chosen and the actual composition 8 employed. The best nozzle and spray pressure for a particular dispenser and composition combination, can then be determined by a series of simple trials.

The container must be small enough to fit into an average sized ladies handbag and be easy to use and fit easily into the hand. All surfaces should be smooth with no sharp edges.

Claims

1. A sprayable composition, for application to a fabric material for containing a hole or tear therein, wherein said composition has a sufficiently low viscosity for spray application and is hardenable, after spray application to a site of a hole or tear in a fabric material, to bind threads of the fabric sufficiently to provide a barrier to significant further enlargening of the hole or tear.

2. A sprayable composition, as claimed in claim 1, wherein the hardened composition is substantially colourless.

3. A composition as claimed in either claim 1 or claim 2, wherein the composition is hardenable, after spray application to a site of a hole or tear in a fabric material under tension, to bind threads of the fabric sufficiently to provide a barrier to significant further enlargening of the hole or tear.

4. A sprayable composition, as claimed in claim 3, wherein the fabric material is under tension created by a wearer's body.

5. A sprayable composition, as claimed in claim 4, wherein the article of clothing is an article of hosiery.

6. A composition as claimed in any of the preceding claims, wherein the fabric material is formed from polyamide filaments.

7. A sprayable composition as claimed in any of the preceding claims, comprising a binding agent and a solvent carrier, wherein, after spray application to a site of a hole or tear in a fabric material, the solvent carrier evaporates leaving the binding agent to form a body, which binds fibres of the fabric sufficiently to provide a barrier to significant further enlargening of the tear or hole.

8. A sprayable composition as claimed in claim 7, wherein the binding agent is a polymeric material, or a polymerisable material and the solvent is a volatile organic solvent.

9. A sprayable composition, as claimed in either claim 7 or 8, wherein the binding agent is nitrocellulose, cellulose propionate, cellulose acetate butyrate, ethyl cellulose, sucrose acetate isobutyrate, polyvinyl acetate, polyvinyl alcohol, an acrylic resin, polymethyl methacrylate, or a mixture of any of these.

10, A sprayable composition as claimed in any of either claims 7 to 9, wherein the solvent is acetone, ethyl acetate, ethanol, butyl acetate, methyl ethyl ketone, toluene or a mixture of any of these.

11. A method for containing a hole or tear in a fabric material, comprising spraying a mist of fine droplets of a composition as claimed in any of claims 1 to 10, to the site of the hole or tear and allowing the composition to harden, to thereby bind threads of the

fabric sufficiently to provide a barrier to significant further enlargening of the hole or tear.

12. A method as claimed in claim 11 wherein the fabric is under tension.

13. A method as claimed in claim 12, wherein the fabric material forms an article of clothing, which is under tension created by a wearer's body.

14. A method as claimed in claim 13, wherein the article of clothing is an article of hosiery, which is preferably formed from polyamide filaments.

15. Apparatus, for use in a method as claimed in any of claims 11 to 14, which apparatus comprises a reservoir containing a composition, as claimed in any of claims 1 to 10, and means for dispensing said composition as a mist of fine droplets.

16. Apparatus as claimed in claim 15, comprising a mechanically operable atomiser.

17. Apparatus as claimed in claim 15, comprising an aerosol container containing a non-CFC propellant.

18. A sprayable composition, for application to a fabric material for containing a hole or tear therein, substantially as hereinbefore described in the Examples.

19. A method for containing a hole or tear in a fabric material, substantially as hereinbefore described as being in accordance with the present invention.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report) CORRECTED

Application number
9127493.6

Relevant Technical fields

(i) UK Cl (Edition K) CV3 (VABX, VACC, VACX, VAG, VAK, VAL, VAM, VAX); C4X (X11); D1R (RGA)

(ii) Int Cl (Edition 5) C09J; C09K; D06M

Search Examiner
B J BALDOCK

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: DERWENT WPI, WPIL

Date of Search
11 MARCH 1992

Documents considered relevant following a search in respect of claims 1 TO 19

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2196978 A (PLOUGH), see claim 3 and Examples	1, 7 to 10
X	GB 2058820 A (JOHNSON) see page 3 line 30 - page 4 line 8, page 5 line 22 - page 9 line 18	1, 7, 8, 15, 17
X	GB 2047256 A (ENVIROSOL) see claim 9, page 1 lines 31-41	1, 7, 8 10, 15
X	GB 2022603 A (POLYCHROME) see claims, page 2 lines 52-64	1, 7 to 10
X	GB 1573657 (L'OREAL), see Examples A, E, G, I, K	1, 7 to 10
X	GB 1422459 (NOVITAS) see Example 4, page 3 lines 41-43; 58-105	1, 7 to 10, 15, 17
X	GB 1250261 (MINNESOTA MINING), see claims 1, 4; Ex III	1, 7-9 15, 17
X	EP 0170000 A2 (CHESEBROUGH-PONDS) see claims 1 to 4, Tables 1, 2, 3, page 18 line 23 to page 19 line 9	1, 7 to 10

Category	Identity of document and relevant passages	Relevant to claim(s)

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Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report) CORRECTED

Application number
9127493.6

Relevant Technical fields

(i) UK Cl (Edition) Contd. from page 1

(ii) Int Cl (Edition)

Search Examiner
B J BALDOCK

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search
11 MARCH 1992

Documents considered relevant following a search in respect of claims

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	US 4183767 (KESSLER) see claims 1, 6, column 3 lines 10-24	1, 7, 8, 10, 15
X	US 3644241 (COLGATE-PALMOLIVE) see Examples, column 4 line 32 to column 5 line 2	at least 1, 15, 7, 17
X	US 3597384 (KUGLER)	1, 7, 8
X	* JP 570040543 A (SUGIMOTO) see WPI Acc No:- 82-29916E/15	1 to 17
X	DE 002051902 A (WINTER)	at least 1, 3, 5, 7, 11

* Indicates corrected entry

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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